Strand III: Data Analysis and Statistics
Standard 1: Collection, Organization and Presentation of Data - Students collect and explore data, organize data into a useful form, and develop skill in representing and reading data displayed in different formats.

Key Ideas:
1. Data drive many facets of modern society; knowing what data to collect and when and how to obtain them is the starting point of quantitative literacy.
2. Data are of little use until they are organized and presented in a meaningful format.
3. Since different representations highlight different patterns in the data, students must make critical judgments.
4. To solve problems, students frequently must decide what data are needed and plan how to obtain, organize and present them.

Elementary Benchmark	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
1. Collect and explore data through counting, measuring, and conducting surveys and experiments.		**Use pictographs** **D.RE.01.01** Collect and organize data to use in pictographs.			**Represent and solve problems for given data** **D.RE.04.01** Construct tables and bar graphs from given data. **D.RE.04.02** Order a given set of data, find the median, and specify the range of values.
2. Organize data using concrete objects, pictures, tallies, tables, charts, diagrams, and graphs.		**Use pictographs** **D.RE.01.01** Collect and organize data to use in pictographs. **D.RE.01.03** Make pictographs of given data, using both horizontal and vertical forms of graphs; scale should be in units of one and include symbolic representations, e.g., represents one child.	**Create, interpret, and solve problems involving pictographs** **D.RE.02.01** Make pictographs using a scale representation, using scales where symbols equal more than one.		**Represent and solve problems for given data** **D.RE.04.01** Construct tables and bar graphs from given data. **D.RE.04.03** Solve problems using data presented in tables and bar graphs, e.g., compare data represented in two bar graphs; read bar graphs showing two data sets.
3. Present data using a variety of appropriate representations and explain the meaning of the data.		**Use pictographs** **D.RE.01.03** Make pictographs of given data, using both horizontal and vertical forms of graphs; scale should be in units of one and include symbolic representations, e.g., represents one child.			**Represent and solve problems for given data** **D.RE.04.03** Solve problems using data presented in tables and bar graphs, e.g., compare data represented in two bar graphs; read bar graphs showing two data sets.
4. Identify what data are needed to answer a particular question or solve a given problem, and design and implement strategies to obtain, organize and present those data.					

Strand III: Data Analysis and Statistics
Standard 2: Description and Interpretation - Students examine data and describe characteristics of a distribution, relate data to the situation from which they arose, and use data to answer questions convincingly and persuasively.

Key Ideas:
1. The ability to read and interpret data has become a basic-literacy skill in today's world.
2. Patterns in data distributions help students to interpret the findings.
3. Students learn to draw conclusions and to convince and persuade using data to justify their positions.
4. Students should think critically about the data they encounter and exercise judgment in describing and interpreting data.
5. Gathering and interpreting data are important strategies for analyzing and solving problems.

Elementary Benchmark	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
1. Read and explain data they have collected and organized themselves and progress to reading data from other sources.		**Use pictographs** **D.RE.01.01** Collect and organize data to use in pictographs. **D.RE.01.02** Read and interpret pictographs **D.RE.01.03** Make pictographs of given data, using both horizontal and vertical forms of graphs; scale should be in units of one and include symbolic representations, e.g., represents one child.	**Create, interpret, and solve problems involving pictographs** **D.RE.02.02** Read and interpret pictographs with scales, using scale factors of 2 and 3.	**Use bar graphs** **D.RE.03.01** Read and interpret bar graphs, in both horizontal and vertical forms. **D.RE.03.03** Solve problems using information in bar graphs, including comparison of bar graphs.	**Represent and solve problems for given data** **D.RE.04.03** Solve problems using data presented in tables and bar graphs, e.g., compare data represented in two bar graphs; read bar graphs showing two data sets.
2. Describe the shape of the data using informal language.				**Use bar graphs** **D.RE.03.02** Read scales on the axes and identify the maximum, minimum, and range of values in a bar graph.	**Represent and solve problems for given data** **D.RE.04.02** Order a given set of data, find the median, and specify the range of values.
3. Draw, explain and justify conclusions, such as trends based on data.			**Create, interpret, and solve problems involving pictographs** **D.RE.02.03** Solve problems using Information in pictographs; include scales such as "each ■ represents 2 apples"; avoid partial cases.	**Use bar graphs** **D.RE.03.03** Solve problems using information in bar graphs, including comparison of bar graphs.	**Represent and solve problems for given data** **D.RE.04.03** Solve problems using data presented in tables and bar graphs, e.g., compare data represented in two bar graphs; read bar graphs showing two data sets.
4. Raise and answer questions about the source, collection, organization and presentation of data, as well as the conclusions drawn from the data; explore biases in the data.					**Represent and solve problems for given data** **D.RE.04.03** Solve problems using data presented in tables and bar graphs, e.g., compare data represented in two bar graphs; read bar graphs showing two data sets.
5. Formulate questions and problems and gather and interpret data to answer those questions.			**Create, interpret, and solve problems involving pictographs** **D.RE.02.03** Solve problems using. Information in pictographs; include scales such as "each ■ represents 2 apples"; avoid partial cases.		**Represent and solve problems for given data** **D.RE.04.01** Construct tables and bar graphs from given data.

Strand III: Data Analysis and Statistics
Standard 3: Inference and Prediction - Students draw defensible inferences about unknown outcomes, make predictions, and identify the degree of confidence they have in their predictions.

Key Ideas:
1. Making and testing hypotheses is an essential technique for gaining new knowledge.
2. In order to test hypotheses, students must carefully design their experimental techniques.
3. Critical judgment develops as students learn to formulate, communicate and evaluate arguments and conclusions based on data.
4. Patterns in known data give students confidence in making inferences about unknown situations.
5. Students learn that inferences and predictions are powerful tools for answering questions and solving problems.

Elementary Benchmark	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
1. Make and test hypotheses.					
2. Conduct surveys, samplings and experiments to solve problems and answer questions of interest to them.					
3. Formulate and communicate arguments and conclusions based on data and evaluate their arguments and those of others.					**Represent and solve problems for given data** **D.RE.04.03** Solve problems using data presented in tables and bar graphs, e.g., compare data represented in two bar graphs; read bar graphs showing two data sets.
4. Make and explain predictions based on data.					
5. Make predictions to answer questions and solve problems.					